

KOKAI PATENT APPLICATION NO. SHO 62-244830

**CONVEYING METHOD FOR FABRICS, ETC. AND APPARATUS USED**

[Translated from Japanese]

[Translation No. LPX20338]

Translation Requested by: Jim McDonell 3M

Translation Provided by: Yoko and Bob Jasper  
Japanese Language Services  
16 Oakridge Drive  
White Bear Lake, MN 55110

(651) 426-3017 Fax (651) 426-8483  
e-mail: [bjasper@mediaone.net](mailto:bjasper@mediaone.net)

JAPANESE PATENT OFFICE (JP)

PATENT JOURNAL (A)

KOKAI PATENT APPLICATION NO. SHO 62-244830

Int. Cl. <sup>4</sup> :	B 65 H 3/20 B 25 J 15/00
Identification Code:	
Sequence Nos. for Office Use:	7456-3F 7502-3F
Filing No.:	Sho 61-86510
Filing Date:	April 14, 1986
Publication Date:	October 26, 1987
No. of Claims:	2 (Total of 6 pages in the [Japanese] document)
Examination Request:	Filed

CONVEYING METHOD FOR FABRICS, ETC. AND APPARATUS USED

*[Nunonado no isoh houhoh oyobi sono sohchi]*

Inventor(s):	Yoshiyuki Kobayashi 2-6-10-311 Kita Nakamura, Nerima-ku Tokyo
Applicant(s):	Yoshiyuki Kobayashi Same as above

Agent(s):

Takeo Suzuki  
Patent attorney

[There are no amendments to this patent.]

## Specification

### 1. Title of the invention

Conveying method for fabrics, etc. and apparatus used

### 2. Claims of the invention

1. A method for conveying fabrics, etc. characterized by the fact that pressure is applied to a film-like material to be conveyed located at a predetermined position by at least the adhesive member of the retainer of a conveyor provided with an adhesive member used for retention of film-like materials such as fabric and paper and a retainer equipped with a press member that travels relative to the aforementioned adhesive member, and the film-like material to be conveyed is conveyed with the retainer by the above-mentioned conveyor, removal of the adhesive member from the film-like material is performed as the aforementioned press member provided near the adhesive member and the adhesive member holding the film-like material are conveyed relative to one another, namely, the adhesive member is moved away from the film-like material, and the film-like material is released at a predetermined position.

2. A method for conveying fabrics, etc. with a structure comprising an adhesive member that holds a film-like material such as fabric or paper, a retainer provided with a press member for the film-like material, and a conveyor used for conveying of the aforementioned retainer, in which the film-like material to be conveyed is removed from the adhesive member by the press member as the above-mentioned press member and the adhesive member travel relative to one another.

### 3. Detailed description of the invention

#### <Field of industrial application>

The present invention pertains to a conveying method for sheet-like materials such as fabrics and paper, and to the apparatus used.

#### <Prior art>

Until now, transporting of fabric, etc. from the fabric, etc. source after cutting according to a pattern was done manually.

#### <Problems to be solved by the invention>

In the past, transporting of sheet-like materials such as fabric by mechanical means is difficult after each piece is cut, and automation is difficult. However, in order to save time and energy after cutting the pattern by a computer-controlled laser in recent years, automation is essential.

[p. 2]

Furthermore, automation is demanded for transporting amorphous sheet-like materials after cutting, as well.

The present invention is based on the above background and the purpose of the present invention is to meet the above-mentioned demand.

#### <Means to solve the problem>

The present invention is:

(1) A method for conveying fabrics, etc. characterized by the fact that pressure is applied to a film-like material to be conveyed located at a predetermined position by at least the adhesive member of the retainer of a conveyor provided with an adhesive member used for retention of film-like materials such as fabric and paper and a retainer equipped with a press member that travels relative to the aforementioned adhesive member, and the film-like material to be conveyed is conveyed with the retainer by the above-mentioned conveyor, removal of the

adhesive member from the film-like material is performed as the aforementioned press member provided near the adhesive member and the adhesive member holding the film-like material are conveyed relative to one another, namely, the adhesive member is moved away from the film-like material, and the film-like material is released at a predetermined position.

(2) A method for conveying fabrics, etc. with a structure comprising an adhesive member that holds a film-like material such as fabric or paper, a retainer provided with a press member for the film-like material, and a conveyor used for conveying of the aforementioned retainer, in which the film-like material to be conveyed is removed from the adhesive member by the press member as the above-mentioned press member and the adhesive member travel relative to one another.

#### <Work of the invention>

In the present invention that utilizes the above-mentioned method and the apparatus, it is possible to hold a sheet of a film-like material at the adhesive member after the above-mentioned treatment, and furthermore, the film-like material is released from the adhesive surface at a predetermined position after the film-like material is transported to the position.

#### <Working example>

In the following, the present invention is explained in further detail with drawings.

A working example is shown in Fig. 1. In this case, horizontal arm (2) that protrudes sideways is provided on the rectangular main unit, vertical arm (3) is provided at the end of the above-mentioned horizontal arm (2), and a box-like retainer (4) is further provided at the upper end of the aforementioned vertical arm (3). Furthermore, slide bar (5) that slides in the predetermined longitudinal direction is provided for the upper part of the main unit (1). In this case, slot (6) is provided for the upper part of the main unit (1) in the longitudinal direction and the slide bar (5) protrudes from the slot (6) from inside the main unit (1). A device capable of sliding the above-mentioned slide bar (5) along the slot (6) is provided inside the main unit (1).

The above-mentioned device may utilize an electric motor or hydraulic means and is not especially limited. Horizontal arm (2) extends from the upper part of the slide bar (5) in the horizontal direction. The center area of the above-mentioned horizontal arm (2) is provided with a bellows (7), and the piston system described below is provided inside. Stretching is made possible for the horizontal arm (2) in the horizontal direction by the slide of the cylinder inside. As described above, vertical arm (3) that extends in the vertical direction is provided for the leading edge of horizontal arm (2).

In this case also, the center area of the above-mentioned vertical arm (3) is provided with a bellows (7'), and the piston system described below is provided inside. Thus, stretching is made possible for the vertical arm (3) in the vertical direction. retainer (4) is provided for the leading edge of vertical arm (3).

The device is explained in further detail with Fig. 2. The base member (2') of the horizontal arm (2) is fastened to the aforementioned slide bar (5) and cylinder (8) is provided inside the aforementioned base member (2'). Piston bar (9) inside the cylinder (8) protrudes from the base member (2'), and connects to base member (3') of vertical arm (3) and is attached at the leading end of the aforementioned piston bar (9). Guide bars (10) that extend parallel to base member (2') are provided and attached to base member (3'), and the structure is made in such a manner that the above-mentioned guide bars (10) are stored inside base member (2') with the motion of piston bar (9). Bellows (7) is provided around the above-mentioned piston bar (9) and guide bars (10), namely, between base member (2') and base member (3').

[p. 3]

As in the case of base member (2'), cylinder (8') is provided inside base member (3') and is structured in such a manner that the piston bar (not shown in the fig.) inside travels in the vertical direction. Furthermore, retainer (4) is provided at the leading edge of the above-mentioned piston bar. Furthermore, guide bar (10') extends inside the base member (3') from the retainer (4), and the structure is made in such a manner that it can be stored inside base member

(3') as in the case of the guide bar (10).

Instead of the above-mentioned piston system, other methods may be used for conveying the retainer (4), and the present invention is not limited to the above-mentioned working example. Furthermore, the above-mentioned piston system may utilize electric motors or hydraulic means and is not especially limited. The above-mentioned retainer (4) is explained in further detail with Fig. 3. A tandem lift plate (12) is provided inside cover (11), which is a box with an open bottom. The plate face of the lift plate (12) is arranged horizontally and cylinder (8'') is provided for the upper surface, namely, the surface that faces inside the cover (11), and furthermore, piston bar (9') is provided on the surface as well. The leading edge of piston bar (9') is fastened inside cover (11) and the lift plate (12) travels in the vertical direction inside the cover with the motion of the piston bar. Furthermore, guide bars (10') (10'') are provided for the upper surface of the lift plate (12) parallel to the above-mentioned piston bar (9'), and the guide members (13) (13) that store the aforementioned guide bar (10') (10'') are provided inside the cover (11) so as to stabilize the vertical motion. Furthermore, take-up roll (14) and feed roll (14') having a feeder with numerical control (not shown in the fig.) are provided for the upper surface of the above-mentioned lift plate (12). Furthermore, motor (15) that drives the take-up roll (14) and gear (16) that transfers the power of the motor (15) to the roll (14) are provided near the take-up roll.

A rolled adhesive tape (17) with the surface coated with an adhesive material is mounted on feed roll (14'). The above-mentioned adhesive tape (17) covers the lower surface of the lift plate (12) on the short side of the lift plate (12), and is fed to the take-up roll (14) from the other short side. The feed position of the adhesive tape (17) is determined by the guides (18)(18) and guide rolls (19)(19) positioned at predetermined locations. As described above, the adhesive tape (17) covers the lower surface of lift plate (12).

A net-like or wedge-like line is extended for the lower opening of the cover (11), or the opening is covered with a sheet-like material, to form separator (20). The lift plate (12) travels

inside the cover (11) with the area near the above-mentioned separator (20) as the lower limit. A controller that takes-up the adhesive tape as the number of movements of the lift plate (12) is counted and the number reaches a predetermined number is provided for take-up roll (14) (includes motor (15) and gear (16)). (The number can be predetermined) for the above-mentioned controller through detection of errors of the retention of the material to be conveyed, and the take-up roll (14) is set accordingly.

The principle of the method of conveying shown in Fig. 4. The retainer (4) descends toward the material to be conveyed such as fabric (21) as a result of movement of the horizontal arm (2) or vertical arm (3) (not shown in the figure) (See Fig. 4(a)). As the retainer (4) comes over the material to be conveyed (21) (Fig. 4(b), the lift plate (12) descends inside the retainer (4), and the adhesive tape (17) comes in contact with the surface of the material to be conveyed (21) (Fig. 4(c)).

The adhesive tape (17) on the lift plate (12) retains the material to be conveyed (21), and the retainer (4) is shifted as a result of the movement of the horizontal arm (2) or vertical arm (3) (Fig. 4(d) and Fig. 4(e)). When the retainer (4) comes to the target position (Fig. 4(f) and Fig. 4(g)) or near said position, the lift plate (12) ascends inside the retainer (4), and the material to be conveyed (21) is separated from the adhesive tape (17) by separator (20). In this manner, the material to be conveyed is released at the target position (Fig. 4(h)). Subsequently, the retainer moves to the position that starts the process over again (Fig. 4(i)). According to the above-mentioned principle, conveying of material to be conveyed is achieved. For an application example of the present invention, conveying of cut fabrics, after a variety of treatments (pressing, sizing, sewing, bonding, etc.), conveying of sewing patterns, etc. can be mentioned. Furthermore, the present invention can be widely applied to conveying of sheet-like materials (film-like materials), and the invention is not limited to the above-mentioned example.



<Effect>

The present invention makes it possible to convey a film-like material such as a fabric securely without damaging the material, and automation of the process can be achieved.

[p. 4]

**4. Brief description of the figures**

Fig. 1 is a perspective view that shows a working example of the apparatus of the present invention, and Fig. 2 is a partially cut-away side view of the same, and Fig. 3 is the explanatory drawing of the same. Fig. 4 is an explanatory drawing of the principle of the method of the present invention.

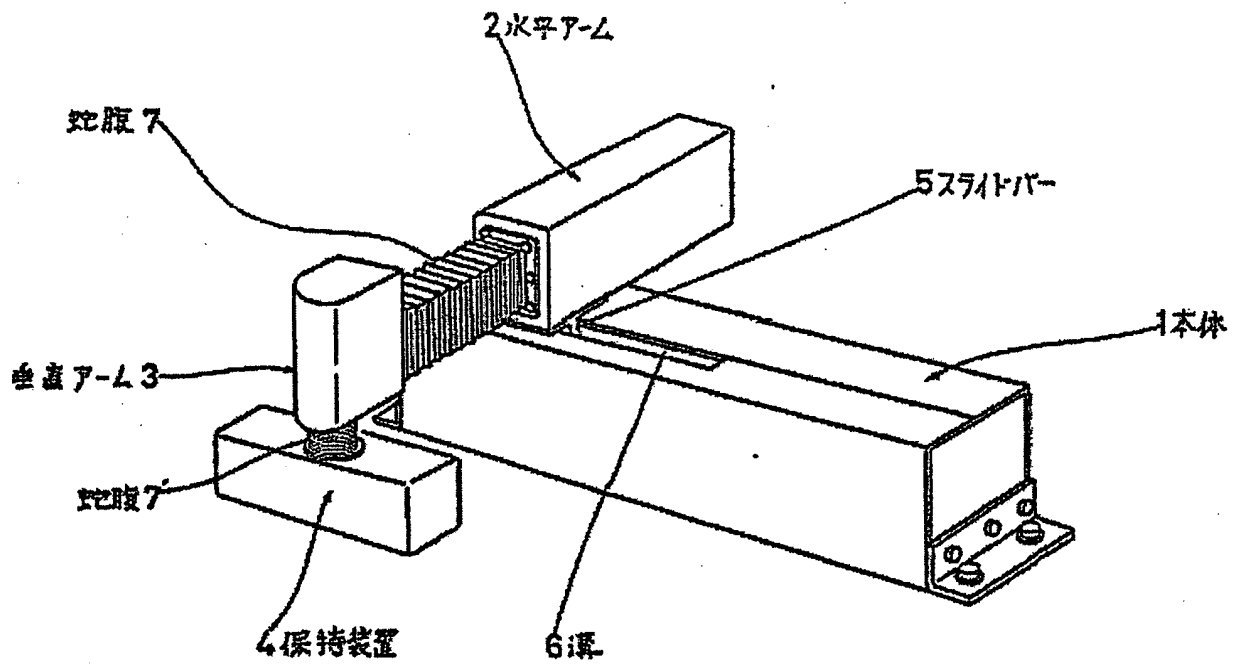
**Explanation of codes**

(1) ... Main unit, (2) ... Horizontal arm, (3) ... Vertical arm, (4) ... Retainer, (5) ... Slide bar, (12) ... Lift plate, (17) ... Adhesive tape, (20) ... Separator

**Applicant:** Yoshiyuki Kobayashi

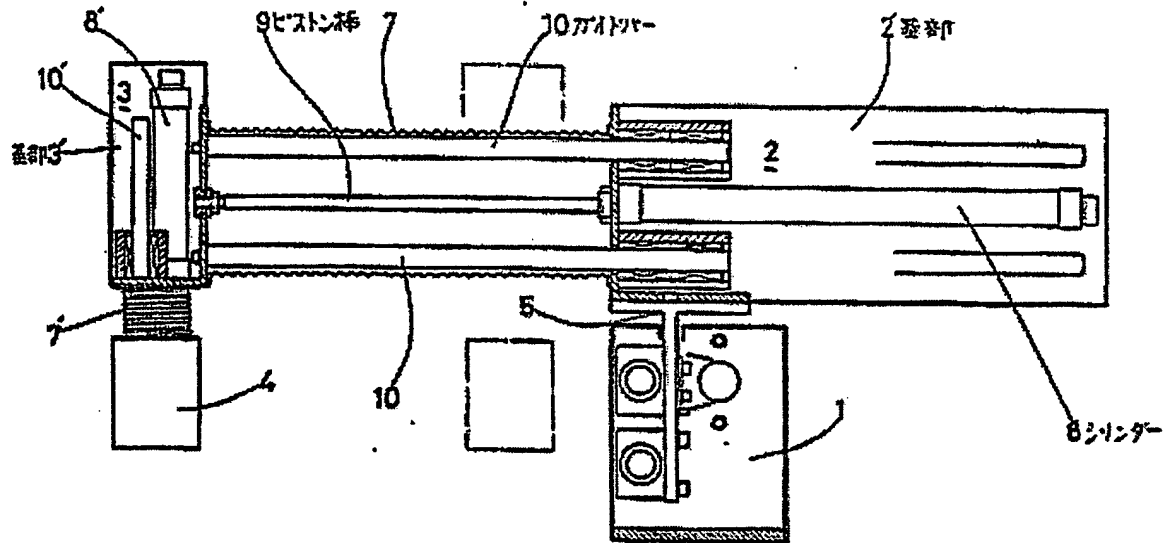
**Agent:** Takeo Suzuki, patent attorney

[Fig. 1]



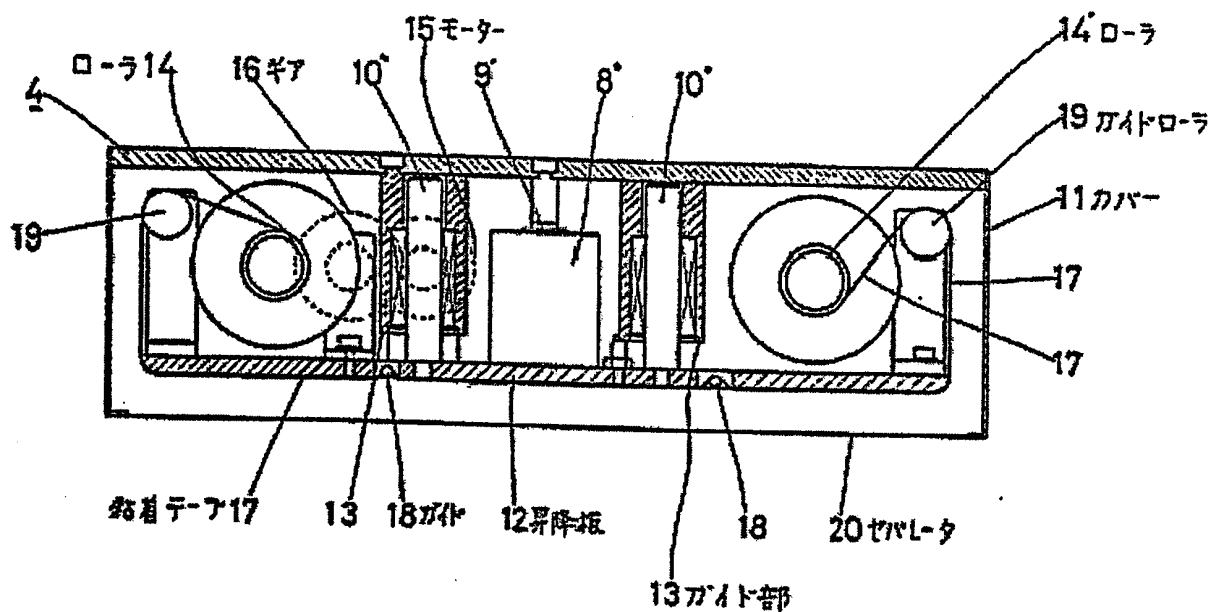
- 1 ... Main unit
- 2 ... Horizontal arm
- 3 ... Vertical arm
- 4 ... Retainer
- 5 ... Slide bar
- 6 ... Slot
- 7, 7' ... Bellows

[Fig. 2]



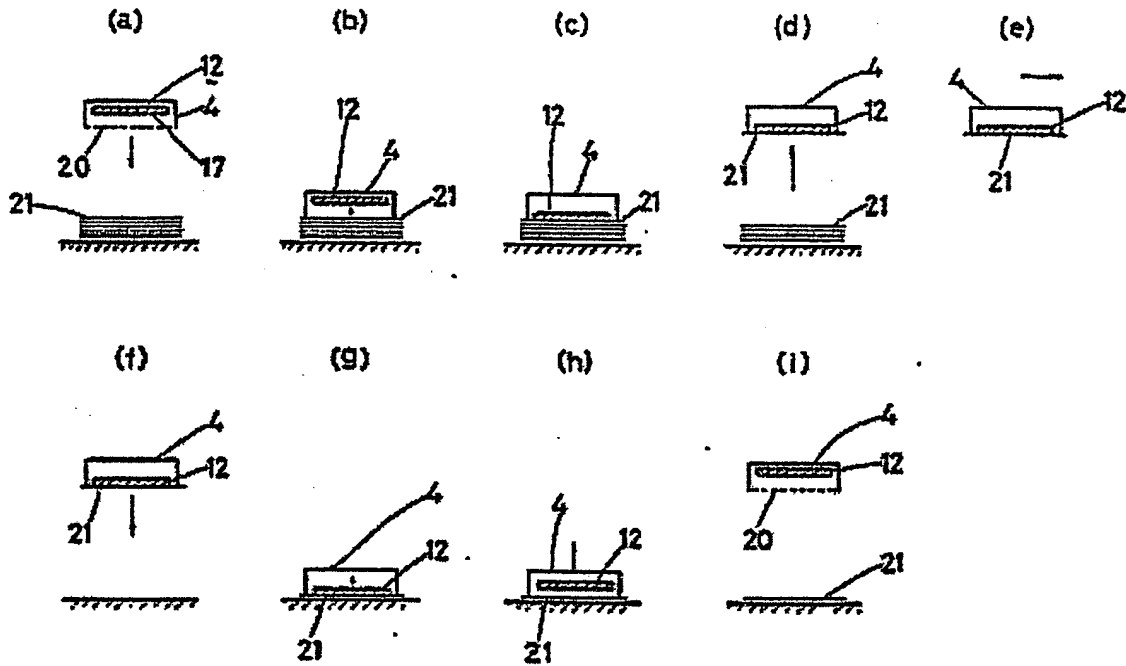
- 2', 3': ... Base
- 7: ... Bellows
- 8: ... Cylinder
- 9: ... Piston bar
- 10: ... Guide bar

[Fig. 3]



- 11: ... Cover
- 12 ... Lift plate
- 13: ... Guide member
- 14: ... Roll
- 15: ... Motor
- 16: ... Gear
- 18: ... Guide
- 19: ... Guide roll

[Fig. 4]



THIS PAGE BLANK (USPTO)